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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

PLAN FOR THE ANNUAL EXAMINATION OF THE MADISON AND TARGHEE NATIONAL FORESTS

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INTRODUCTION

For the past twenty years a serious epidemic of the mountain pine beetle has been spreading south along the west side of the Continental Divide. Several futile attempts have been made to check this spread in order to protect the more valuable timber stands to the south. The Big Hole Basin control project, which was instituted in 1926 and discontinued in the fall of 1928, was the last of these attempts.

In order to emphasize the seriousness of the present situation it seems necessary to discuss, rather briefly, the institution of this project and the reason for its abandonment. At the time this project was started the head of the epidemic rested on the East Fork of the Bitterroot River. The plan of control called for the utilization of the Big Hole Basin as a zone of defense in which all infested trees were to be treated each year as long as reinfestation occurred. Though the Continental Divide, which was hoped would prove to be at least a partial barrier, separated the Big Hole Basin from the Bitterroot epidemic, a solid body of lodgepole connected the two areas. The large number of insects which continued to spread from the Bitterroot

into the areas of the Big Hole Basin covered by control, demonstrated very clearly that this hoped-for barrier had failed to materialize. This fact, with the assurance that the number of insects crossing this divide would increase during the next five or six years, placed the continuation of the project in an untenable position. Furthermore, the discovery that insects from the severe outbreak of the mountain pine beetle on the Salmon Forest had started to spread into the areas to the south of the Big Hole Basin, or zone of defense, made the continuation of the present plan an unsound procedure, and it was discontinued. This position was taken because of the large sums of money that would be required during the next five or six years for control; the fact that within that period there would no doubt be a time when it would be financially and physically impossible to treat the number of infested trees which would be present within the area; and because no assurance of success could be given even though it were possible to successfully carry out the provisions of the plan.

FUTURE PLAN

Though future control work within the Big Hole Basin has been discontinued, there will be no cessation in the effort to prevent the insects from becoming established within the timbered areas to the south and east. The present plan will take advantage of the rather wide timberless region which lies between the Beaverhead National Forest

and adjacent timber stands, in the hope that it will at least act as a partial barrier to the spread of the Bitterroot and Salmon outbreaks. Though this region varies in width from 15 to 30 miles, it is realized that under favorable conditions it would no doubt be possible for the insects to cross and infest trees on the opposite side. To guard against such an occurrence it will be necessary to make a rather intensive examination of the timbered areas immediately to the south and east of the Beaverhead Forest for the purpose of locating any insects which may cross this barrier, in order that they may be promptly treated and potential outbreaks checked in their incipiency. Furthermore, it will be a function of this survey to locate and treat all local outbreaks that have no relation to the Bitterroot and Salmon epidemics in order that they can also be prevented from developing into serious situations. It will be necessary to continue this program for a number of years, or until such a time as all local outbreaks will have been reduced, and the danger of insects crossing the hoped-for barrier no longer exists.

The actual number of years that it will be necessary to conduct this survey is difficult to estimate, but one can feel safe in assuming that it will be a matter of at least eight years. The value of this plan lies in the fact that we are reasonably safe in assuming that the areas to be examined are undoubtedly ahead of, or at least at the head of, the spreading epidemics, and that the terrain provides at least a partial barrier. Its success will be in the prompt treatment of all infested

trees as they are located within the areas. All infested trees must be regarded in the light of potential outbreaks and treated before the following spring. Such a plan is a rather drastic departure from our former policy, though in this case we are confronted with a problem of prevention rather than control, and such action is justified.

In addition to the examination of the areas to the south and east of this proposed barrier, an extensive survey should be made of the Beaverhead Forest. From such a survey valuable entomological information relative to the rate of advance, distance of spread, intensity of infestation, etc., will be secured. This information will also be of value in planning the future intensity of the examination of the areas to the south and east.

PLAN OF SURVEY

The institution of this plan will not be an easy one for it will be necessary to cover a large and rough territory of some 950,000 acres of lodgepole pine each year. All bodies of lodgepole pine, white bark pine, and yellow pine, regardless of their size and location, will need to be included in this examination. The plan best adapted to the making of such a survey will be a combination of the sample strip and topographic methods. All bodies of pine will be viewed from ridges, lookout points, etc., and the trees with discolored foliage counted and their approximate location recorded on a map. In traveling between lookout points, etc., sample strips will be run in order to secure the proper correlation between

the red-tops and the new attacks, and to pick up any new attacks not indicated by red-tops. In areas where red-tops show that an infestation is present, a more intensive system of sample strips will be run. From these strips an estimate will be given as to the number of newly-attacked trees, their approximate location, the most feasible method of treatment, and the approximate cost. Maps will be constructed showing the data secured from the sample strips and the location of the red-tops, etc. Rather accurate data are available relative to the forest types of these Forests, but whenever inaccuracies are noted corrections will be made.

In the use of red-tops as an indication of the present status of insect conditions within an area, the data secured will of a necessity be of the previous year's attack. From such a method it will be possible to overlook new attacks until the following season, as there would be no evidence of discolored foliage the same season of attack. This is a condition which cannot be avoided as it would be impracticable to locate all newly-attacked trees except through a 100 per cent survey that would be uneconomical. As stated, some sample strips will be run in these areas in an attempt to overcome this objection, though it is not regarded as being an extremely serious one, since by keeping an accurate yearly check on each area it is felt that it will be possible to prevent the development of any serious conditions as a result of one season's delay.

Though it will be found that a very large per cent of the red-topped trees have been killed by the mountain pine beetle, the foliage condition cannot be considered as an absolute rule. Therefore, as many as possible of the groups of red-tops will be visited in order to eliminate such factors as porcupines, secondary insects, fire, water, etc.

COST OF SURVEY FOR 1929 SEASON

The estimated cost of this survey, which includes a two-weeks' extensive examination of white pine areas within the Coeur d'Alene National Forest, has been placed at $2,600.00. This estimate has been arrived at from the following subdivided items:

Salaries -	
2 men, 3½ months @ $100 per month	$700.00
1 man, 3½ " @ $125 " "	437.00
Travel (Ford truck) -	
Estimated gas, oil, and repairs	400.00
Subsistence -	
Estimated 315 man-days @ $2.50 a day	787.00
Miscellaneous -	
Travel of Bureau of Entomology officers, equipment, etc.	300.00
Total	$ 2,624.00

Of this allotment approximately 4/7 of the amount, or about $1,500.00, would be spent on the examination of the Madison and Targhee National Forests. To reduce this expenditure to an acreage

basis would result in a charge of $0.0015 per acre, which as a protection cost is considered as being extremely low. The charge for travel is low due to the fact that a Ford truck, purchased by District 1 in 1928 from Insect Control funds, will be available for this work.

The remainder of this allotment will be devoted to a survey of the Big Hole Basin and to an examination of certain white pine stands of the Coeur d'Alene National Forest. In justifying the expenditure of this $1,100.00 there is no need to comment upon the advantage of following the epidemic within the Beaverhead Forest, the value of which is believed to be thoroughly understood. The need for examination of areas within the Coeur d'Alene Forest arises from the proposed Steamboat Creek project for which an allotment of $6,500.00 has been made. This project was recommended upon rather accurate information relative to the small drainage itself, but with no data whatever as to conditions within adjacent areas. The recommendation for this allotment was made contingent upon provision being made for this examination.

RECOMMENDATIONS

The importance and seriousness of the situation which now exists within the lodgepole forests of Montana and Idaho should be fully realized. A situation is now present where the destruction of future

timber stands by these insects can be viewed in the light of prevention rather than control. Timber losses and expenditures of the past justify that every effort be made to prevent these epidemics from spreading into the timber stands to the south and east of the Beaverhead Forest. It is therefore recommended that an allotment of $2,600.00 be made available to the District Forester, Missoula, Montana, for the purpose of covering the expense of this survey.

Respectfully Submitted,

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Entomologist.